WHAT IS CLAIMED IS:

1. A catalyst ink for a fuel cell comprising particles of a fluorocarbon polymer with a particle size of about 1 to about 12 microns, and a catalytic material.

2. The catalyst ink of claim 1, wherein the microparticles have a specific surface area of about 5 m^2/g to about 10 m^2/g.

3. The catalyst ink of claim 1, wherein the catalytic material comprises Pt.

4. The catalyst ink of claim 1, wherein the fluorocarbon polymer is selected from the group consisting of polytetrafluoroethylene polymers and fluorinated ethylene-propylene polymers.

5. The catalyst ink of claim 1, further comprising an ionomer.

6. The catalyst ink of claim 5, wherein the ionomer comprises a liquid copolymer of tetrafluoroethylene and perfluorovinylethersulfonic acid.

7. A process for making a catalyst ink for a fuel cell, comprising mixing, at room temperature, components comprising water, particles of a fluorocarbon polymer with a particle size of about 1 to about 4 microns, and a catalytic material.

8. The process of claim 5, wherein the microparticles have a surface area of about 5 to about 10 m^2/g.

9. The process of claim 5, wherein the catalytic material comprises Pt.

10. The process of claim 5, wherein the fluorocarbon polymer is selected from the group consisting of polytetrafluoroethylene polymers and fluorinated ethylene-propylene polymers.

11. The process of claim 1, wherein the catalyst ink further comprises an ionomer.

10. The process of claim 9, wherein the ionomer comprises a liquid copolymer of tetrafluoroethylene and perfluorvinyletherosulfonic acid.

11. A process for making an electrode assembly for a fuel cell, comprising:

(a) providing a catalyst ink comprising water, particles of a fluorocarbon polymer with a particle size of about 1 to about 4 microns, and a catalytic material; and

(b) applying the catalyst ink at room temperature to at least one side of a substrate.

12. The process of claim 11, wherein the substrate is a membrane.

13. The process of claim 12, further comprising roughening the surface of the membrane prior to applying the catalyst ink.

14. The process of claim 13, wherein the surface is roughened by contacting the membrane with an abrasive selected from the group consisting of silicon nitride, boron nitride, silicon carbide, silica and boron carbide.

15. The process of claim 14, wherein the abrasive has a grit size of about 300 to about 400.

16. A process for making a membrane electrode assembly for a fuel cell, comprising:

(a) providing a catalyst ink comprising particles of a fluorocarbon polymer with a particle size of about 1 to about 4 microns, and a catalytic material;

(b) applying the catalyst ink at room temperature to at least one side of a membrane; and

(c) bonding the membrane to at least one electrode.

17. The process of claim 16, further comprising roughening the surface of the membrane prior to applying the catalyst ink.

18. A fuel cell comprising a membrane electrode assembly, wherein the membrane electrode assembly is made by the process of:

a) providing a catalyst ink comprising particles of a fluorocarbon polymer with a particle size of about 1 to about 4 microns, and a catalytic material;

(b) applying the catalyst ink at room temperature to at least one side of a membrane; and

(c) bonding the membrane to at least one electrode.